> Active networks perhaps go a step further by additionally postulating that executable content will be delivered to network elements by active packets of 'capsules.' In active network, packets are the vehicle of program delivery and the basis of network control. Theoretically, this approach can be more dynamic than quasi-static programmable networks because it might be possible to customize network services at the granularity of individual packets.[33]

This statement suggests that as fast packet switches and networks are deployed, there might be far more use of intelligent networks than at present.

V. OPPORTUNITIES FOR BA-NY DISCRIMINATION

77. In the prior discussion, I have established three key conclusions concerning the ability of BA-NY to engage in anti-competitive, discriminatory activities against its IXC competitors if it is granted authority to enter the in-region, interLATA services market.. First, BA-NY has the power to discriminate against IXC competitors in the provision of both local exchange and exchange access services. Discrimination against ISPs is included in this form of discrimination as well.

78. Second, BA-NY has the incentive to discriminate against competitive suppliers of local exchange services. Discrimination against them can not only thwart the development of alternative suppliers of exchange access, but also hamper the ability of IXCs to enter the local exchange services market in order to bundle long distance, Internet, and local exchange services. Therefore, discrimination against this class of competitor is relevant to this proceeding.

79. It might be assumed that the availability of unbundled loops and other network elements from BA-NY might lessen the opportunity for both of these forms of discrimination. However,

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[32]Glowacz, Dave, "AIN Services Get New Life in 1993," Telephony (January 11, 1993), p. 32.

[33] Thoms M. Chen and Alden W. Jackson, "Active and Programmable Networks," Guest Editorial, IEEE Network Magazine, May/June 1998, p. 10.

if BA-NY discriminates in the provision of such elements, using the mechanisms discussed below, the type of discrimination it practices may have changed, but the result does not, because the purchasers of these elements cannot build a viable competitive supply of exchange access. In either case, then, discrimination leads to the result that the IXCs remain dependent on BA-NY's bottleneck supply of exchange access.

80. Third, technical developments in local exchange networks result in the need for different and generally more complex forms of network interconnection. In this increased complexity lie additional opportunities for BA-NY to discriminate against its competitors. These developments include: (a) the use of standards-based broadband transmission systems; (b) broadband Internet access and other broadband applications; and (c) the deployment of common channel signaling systems and the related development of AIN or software-driven network elements.

81. In the remainder of this section, I first explain how discrimination can be introduced at several stages of a technology's life cycle, from the earliest stage of defining and planning the technology to the operation of the technology after it is deployed in the network. I will give examples of discrimination at each of these stages. I will then present examples of the opportunities for BA-NY discrimination against each of two classes of competitors as they exist today: an IXC and a CLEC. In discussing discrimination against an IXC competitor, I will also give an example of BA-NY discrimination against the IXC in its consolidated role of an ISP as well.

A. Discrimination During the Life Cycle of a Technology

1. Technology Definition and Planning

82. Before a technology can be deployed in a local exchange network, its attributes and uses must be defined and incorporated into the planning process for that network. With respect to the

issue of discrimination, a key attribute of a technology is whether or not the technology will support non-discriminatory access by all potential users of the technology. Two examples demonstrate the potential for discrimination during this part of the technology life cycle.

a. The AT&T Consent Decree

83. Prior to the AT&T Consent Decree with the Department of Justice signed in 1982, AT&T and its telephone company and manufacturing subsidiaries -- the Bell System -- designed local switching systems without the ability to provide access to multiple long distance providers. As a result, non-affiliated long distance providers were at a distinct disadvantage in gaining access to the customers of the local telephone company subsidiaries. Thus, AT&T was able to discriminate against potential non-affiliated suppliers of long distance service.

84. Only after the Consent Decree called for the provision of equal access, entailing equitable treatment of all long distance providers with respect to digits dialed, the time required to establish connections, transmission quality over those connections, and the like, was the network modified to support equal access. It took a considerable amount of time and expense to accomplish these modifications.[34] Yet clearly, the fact that the network could be modified meant it could have been designed to provide equal access from the beginning -- or certainly from the time software-controlled switches were deployed in the network well before divestiture -- but it was not in the interests of the Bell System to do so.

b. Open Network Architecture

85. A more recent example of discrimination during the planning stage of a technology, which thwarted and delayed the development of advanced competitive services, is contained in

[34] It was deemed impossible to upgrade older "electromechanical" switching systems, and the MFJ in effect mandated an accelerated effort to replace these switches with modern computer-controlled switches.

the history of Open Network Architecture (ONA) before the FCC. In Computer Inquiry III, which was launched in 1985, the Commission determined that the BOCs should be allowed to provide unregulated enhanced services jointly with their regulated basic local exchange services if they met certain conditions. In other words, they were relieved of the long-standing requirement to offer such unregulated services through a separate, arms-length subsidiary subject to a set of conditions.

86. One of the most important of these conditions was a requirement that the BOCs unbundle their local exchange networks and offer the resulting "Basic Service Elements" to all enhanced service providers (including their own internal enhanced service operations) on a tariffed basis and under the same terms and conditions. The notion was that both the BOCs and the unaffiliated providers would then use these basic building blocks to construct their own competitive enhanced service offerings. This concept of unbundled Basic Service Elements that the Commission tried to implement in the ONA proceeding is similar to the requirement for unbundled network elements in the 1996 Telecommunications Act.

87. The concept of unbundling and allowing all enhanced service providers to have access to the basic building blocks of the local telephone network was called ONA. With ONA, it appeared that the FCC had ordered the ultimate unbundling of the local exchange network into its component parts. However, the ONA Plans submitted to the Commission by the BOCs to meet the ONA requirements were based upon the "Model ONA Plan" developed by Bellcore (which was then owned by the BOCs).

88. The Model ONA Plan destroyed the fundamental intent of the ONA concept as originally described by the Commission. It also failed as a true open architecture as that term is understood in the computer and telecommunications industries. It did so by introducing the concept of a

Basic Serving Arrangement, which essentially maintained the status quo by defining the fundamental building blocks to be equivalent to the degree of bundling in the existing local exchange network. What the BOCs ended up offering as Basic Service Elements amounted to little more than enhancements to the custom calling features (such as call forwarding or call waiting) that were already available on modern local CO switches.[35] Thus, by using the Common ONA Model and raising claims of technical harm and technical infeasibility, the BOCs were able to prevent the adoption of a truly unbundled, open architecture as described by the Commission.

89. Moreover, the BOCs priced the Basic Service Arrangements (which enhanced service providers were required to acquire as a condition of obtaining the limited set of Basic Service Elements) so high that they proved to be largely unattractive to enhanced service providers. Instead, enhanced service providers largely continued to buy ordinary business lines in order to offer services to their own customers. These tactics, coupled with refusals to provide for the collocation of enhanced service provider equipment in their local COs, effectively killed the Commission's initial attempts at unbundling.

90. Although the Commission, in the face of stiff BOC opposition, did not order what it referred to as fundamental unbundling, it recognized that further unbundling might be in the public interest. Consequently, the Commission ordered the BOCs to study further unbundling through the Information Industry Liaison Committee (IILC) within the Exchange Carriers Standards Association (ECSA).[36] As a result of the FCC's order, the IILC eventually established

[35] For a more complete discussion of these issues see "Open Network Architecture: A Promise Not Realized," Hatfield Associates, Inc., Boulder, CO (April, 1988).

[36] In re Filing and Review of Open Network Architecture Plans, CC Docket No. 88-2, Phase 1, Memorandum Opinion and Order, 4 F.C.C.R. 1, ¶ 72 (1988) (BOC ONA Order). The ECSA was subsequently renamed the Alliance for Telecommunications Industry Solutions (ATIS).

a group to address issues relating to network unbundling. This group, named the Task Group for IILC Issue 026, included both BOC and non-BOC representatives. The Task Group for IILC Issue 026 developed a physical and a logical unbundling plan for the local exchange network. In April, 1995, the Task Group reached consensus on Issue 026, and a full IILC meeting subsequently approved the closing documentation. It included the opening of 13 AIN interconnection points.

91. Note that the IILC process alone took several years to complete in the face of stiff BOC opposition to such unbundling. While it ultimately led to agreement on some interconnection points, it still left unresolved a host of policy, regulatory, and business issues. It took the 1996 Telecommunications Act to finally begin to resolve these issues.

92. The Act provides a considerable amount of clarification on the concept of open network architectures by requiring network unbundling in the form originally envisioned in the ONA concept. The Act, with its unbundling requirements, was passed more than a decade after the FCC first proposed its ONA requirements. As this example shows, the BOCs can slow down or thwart provision of advanced forms of interconnection when it suits their strategic interests.

93. My criticism of the course of the ONA proceeding and the subsequent unbundling efforts described above should not be taken as a criticism of the FCC's past efforts to promote a more open architecture, nor of the steps it is taking in its interconnection proceeding[37] to carry out portions of the 1996 Act. Rather, it demonstrates how unbundling and interconnection requirements may be thwarted by intransigence on the part of the BOCs.

94. The BOCs' success in dragging out the IILC process to delay the implementation of ONA demonstrates another more general facet of BOC discrimination during the technology

planning cycle; namely, misuse of the standards-setting process. Domestic and international standards processes are intended to produce standards that benefit users and that can be implemented by equipment vendors and network providers in a competitively-neutral fashion. Standards-making principles such as those defined by the American National Standards Institute call for a consensus process that balances the interests of users, equipment manufacturers, and service providers. But through sheer force of their position in the industry and their ability to prolong debate by "slow-rolling" the consensus process, the BOCs are able to delay progress towards such balanced standards.

2. Technology Deployment

95. I have dwelt at some length on the process of defining and planning a new technology, because I believe BOC discrimination during that stage is difficult to detect and yet profound in its impacts. I will deal more briefly with other stages of the technology life cycle.

96. Once a technology had been defined, and presumably manufactured by a provider of telecommunications equipment, the next stage of the life cycle is to purchase and install the technology in the network, which I refer to as the deployment stage. BA-NY is also in a position to discriminate against its competitors in this stage of the life cycle.

97. Consider for instance a new technology for providing exchange access that may offer desirable new features, better performance quality, improved maintenance, and the like. BA-NY possesses data on the amount of exchange access it is providing from each exchange and wire center in its service areas. It also knows where it plans to target sales and advertising for its own

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[37] In re Local Competition Provisions in the Telecommunications Act of 1996, CC Docket No. 96-98, First Report and Order, 11 F.C.C.R. 15499 (1996) ("Interconnection Proceedings")

IXC affiliate. It is therefore able to selectively deploy the new technology in a way that is favorable to its customers.

98. It would be difficult to detect and remedy discrimination in such deployment processes. The only remedy in the case of ONA was what might be characterized as an *a priori* process in which the BOCs were required to deploy ONA capabilities in a fairly uniform fashion and according to a published schedule, along with providing detailed reports on their progress towards implementing the schedule. Such reporting mechanisms were also used for equal access deployment as the result of the Consent Decree and subsequent implementation agreements.

99. Such a mechanism might be appropriate and effective for a remedial action such as the requirement to implement equal access and ONA capabilities, where it was specifically the intent to grant only a limited amount of time for the remedy to be put in place. In the case of deploying replacement technologies, however, it is not at all clear that a schedule should be mandated, or override all the normal considerations of equipment failures and obsolescence that shape the deployment decisions. In other words, BA-NY may be able to successfully hide discrimination in the wealth of legitimate considerations that factor into technology deployment decisions.

3. Technology Operations

100. Once a technology is deployed, it enters the stage where it must be provisioned, administered, and maintained. Provisioning refers to the process of assigning the available capacity of the deployed system to specific services. Administration is the set of activities, including record-keeping, to ensure that the capacity of a given system is being used efficiently, and that currently unutilized capacity is identified and made available for assignment. Maintenance refers to the process of monitoring systems to ensure they are working properly, and when a failure or performance degradation is detected, to take corrective action.

101. BOCs have in the past argued that they cannot discriminate against their competitors in such activities. First, they have claimed they could not degrade service to their competitors without degrading their own service as well. This claim is wrong. It is unlikely, and perhaps infeasible, that BA-NY would discriminate by, say, blatantly introducing errors into part of a bit stream on a jointly-used facility. But that is not how discrimination would likely take place. Instead, it would more likely occur by selectively exercising management systems.

102. Many new standards directed towards facilitating the provisioning, administration, and maintenance of services and facilities offered by telecommunications network providers can be abused. For instance, the Synchronous Optical Network ("SONET") international standard for broadband optical transmission systems provides the means of communicating control information, and collecting monitoring data, that allow operators of the systems to quickly provision circuits, monitor them closely, bypass failed, failing, or poor-quality segments of the system, determine when maintenance is required, and mechanize the process for initiating and tracking the maintenance process. Systems and processes based on SONET do all that – <u>if</u> they are exercised. Unfortunately, they can be exercised selectively by a BOC that is able to use its market power, because many steps, such as provisioning circuits and ordering maintenance activities, must still be originated and completed manually. Thus, it is within BA-NY's ability to selectively use the new capabilities it is deploying to provide and maintain high-quality facilities for itself while providing lower-quality facilities in a less timely fashion to others.

103. Furthermore, the operations systems may facilitate subtle new forms of discrimination. For instance, an operations support system may do a good job of identifying cases of pending capacity exhaust, say in a transmission system. Based on that information, BA-NY could tell its IXC affiliate about the likely exhaust schedule, allowing the affiliate to place orders in advance

and already be in the queue when the pending exhaust is announced, without telling its IXC competitors. That type of discrimination is not monitored and would be difficult to detect or to prove.

104. BA-NY may claim that it would not be possible for it to discriminate in favor of its own IXC affiliate (including the ISP operation of the affiliate) because any attempt to do so would be immediately obvious to other participants and observers of the telecommunications industry. But this is wrong for several reasons. First, while non-affiliated IXCs may have a variety of capabilities that allow them to monitor their own circuits, those capabilities do not allow one carrier to observe other carriers' circuits – including those of a BOC's affiliate. Thus, for instance, it would be difficult or impossible for IXCs to detect cases in which they were receiving inferior provisioning or maintenance intervals, or cases in which a BOC was selectively responding to degradation in its own circuits at a lower error threshold than for other carriers' circuits. Only the most stringent measures imposed by the Commission would have any chance of ensuring such practices are not occurring. The history of ONA suggests that it was very difficult to develop reporting requirements that could provide the assurance that enhanced service providers received treatment equal to that provided to the BOC's own enhanced operations.

105. Second, detection is not the same as correction. BA-NY has discussed a number of systems it posits will detect that competitors are experiencing inferior treatment, but it provides few details on how it will implement a compliance process that will ensure inequalities that are detected will be corrected in a timely matter.

106. The market for broadband services is experiencing rapid growth. As pointed out previously, the effects of discrimination are more dramatic, and sooner, when such rapid growth

is occurring. A carrier in such a marketplace can ill afford to be "slow-rolled" by a BOC in obtaining the additional circuits it requires to accommodate that growth, or in having its circuits maintained properly. Discriminatory treatment will have rapid and dramatic negative effects in such a rapidly expanding marketplace. What all this suggests is that the potential for anti-competitive discrimination in the provision of exchange access by BA-NY has increased, not decreased, since the 1996 Act was passed.

B. Discrimination Against an Unaffiliated IXC

107. BA-NY may discriminate against each of two major classes of its competitors -- IXCs and CLECs. To the extent an IXC competitor is offering ISP and/or Internet backbone services, BA-NY may discriminate against that part of an IXC operation in additional ways.

108. BA-NY may use AIN to discriminate against an unaffiliated IXC. One major benefit of the AIN is that the increased intelligence allows the individual fine tuning or customization of services to meet specific customer requirements. But this very ability to customize means that BA-NY can "fine tune" its local exchange networks to favor (a) its own interexchange operations over its interexchange carrier competitors and/or (b) its own end user customers over the end user customers of its interexchange carrier competitors. Stated another way, AIN provides BA-NY with additional -- and generally more subtle -- methods of discrimination to disadvantage competing IXCs.[38]

109. To take just one example, an important capability enabled by AIN is the voice Virtual Private Network.[39] A voice Virtual Private Network customer purchases from BA-NY and/or

[38]While the discussion in this section focuses on discrimination against IXCs, the same techniques can be used against CLECs as well.

[39] While the term Virtual Private Network was originally coined for the voice service I describe here, current usage applies more often to the provision of a private internet arrangement over the

IXCs what appears to be a set of point-point dedicated, or "private line," circuits dedicated to its use. Typically, these circuits are used to connect customer-owned Private Branch Exchange ("PBX") switches to each other, thereby creating a private switched network that utilizes public transmission facilities. On this network, the customer can have customized numbering plans; various service features such as remote access, selective call screening, and billing at business rates; unified billing statements; and advanced network management capabilities.

110. Originally, such dedicated circuits were literally devoted to the use of the customer that leased them. In a voice Virtual Private Network, however, the circuits are not dedicated at all; they are drawn from the pool of circuits in the public switched network on an on-demand basis. Thus each call on the "private" network actually passes through the switches and transmission facilities of the public network.

111. The AIN provides the necessary mapping between the customer's perceived network features and the attributes of the public network. For instance, it translates telephone numbers in the customer's private numbering plan into numbers recognized by the public network, instructs a switch from which a remote call originates what billing rate should apply to the call, collects "PIN" information from a customer's employee to determine that employee's access rights and calling restrictions, determines where a particular on-net call should be routed based on time of day, point or origin, and employee PIN, and so on.

112. Such networks may involve both local and interLATA circuits and calls. For all the desired features to work properly, there will often be a need for interaction between the intelligent elements of an IXC network where, say, the customer profile is stored, and the local

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public Internet, as described in Subsection D. I use "voice Virtual Private Network" and "Internet Virtual Private Network" to differentiate between the two uses.

switches of the BOC that serve some corporate locations and/or are the point of origination of remote calls. As stated in a National Reliability Council report:

> Access to AIN triggers implies that the local service provider's switch is equipped with the appropriate trigger detection software and that the local service provider allows the third-party service provider the use of these triggers for call control in support of features and services. The availability of triggers for third-party access in a multi-provider environment is another key AIN issue that the industry must address. *Without access to local switch triggers, a third party service provider's ability to offer its own AIN services is limited.*[40] [Emphasis added.]

113. Given the required cooperation and coordination between the AIN elements of IXC and local exchange networks, BA-NY will have ample opportunity to discriminate in favor of its own IXC affiliate. For instance, when requested by a competitive IXC to cooperate in the implementation of a particular Virtual Private Network, it may:

- Refuse to provide interconnection of the IXC's AIN with its own intelligent networks based on alleged technical harm to the network, such as the need to carry signaling traffic in excess of the capacity of their network;
- Refuse to convey certain types of control messages needed to implement promised features of the IXC's Virtual Private Network offering across the AIN for the same reason or because of claims that standards for a particular message type do not exist;
- Refuse to provide access to local switch triggers, or to provide certain forms of interconnection, unless the signaling messages pass through some type of "filter" that it controls -- a filter (or mediation function, as it is often referred to) that is not actually needed to ensure the integrity of the network;

[40]Network Reliability Council (NRC) Reliability Issues - Changing Technologies Focus Group, Advanced Intelligent Network, Subteam Final Report, Section 5.9.1. (Reprinted in International Engineering Consortium, Intelligent Networks: Current Advances and Business Issues, Advances in Intelligent Networks Comprehensive Report Series, Vol. 2, 1997.)

- Use its control over the filter to artificially restrict the message sets to those associated with the services its own affiliate is able to offer, or to degrade the performance of a competitor's service offerings. These degradations can result from delays in the filter or in a requirement for extra messages compared to its own connections;
- Refuse certain forms of interconnection and thereby force a competing IXC or its customers to store sensitive customer information on the BA-NY network rather than in its own network. An example of this would be BA-NY's refusal to provide interconnection between its Service Control Point and a competitive interexchange carrier's database. This would force the competitor to place sensitive customer information in BA-NY's database; and
- Refuse to develop, deploy, and execute certain types of service logic an unaffiliated IXC requires based on potential harm or developmental costs or priorities.

114. Even if BA-NY were willing to install the IXC's service features in its switches and AIN elements, the IXC might be required to reveal technical information on how its Virtual Private Network features operate. BA-NY could give its long-distance affiliate discriminatory access to this information, while protecting comparable information obtained from its affiliate from unaffiliated competitors.

115. Because of the technical complexity of the SS7/AIN architecture, the increasingly critical role it plays as the nervous system of the network, and the often more limited technical knowledge of outsiders, determining whether a particular refusal or delay is justified becomes an extremely difficult task for competitors and regulators alike. The ability to refuse or delay such requests puts BA-NY in the position of controlling the development of new and competitive services, both as to whether the new service is created at all or, more subtly, when it comes to market and who can provide it. Through these means, BA-NY can extend its monopoly power

over physical facilities (e.g., the local loop) upward into the signaling network and software driven service logic and thereby discriminate against its interexchange competitors.

C. Discrimination Against the ISP Operation of an Unaffiliated IXC

116. BA-NY can discriminate against the ISP operations of unaffiliated IXCs through its control of their customers' access. For example, somewhat analogously to the voice Virtual Private Network, an Internet Virtual Private Network is an arrangement in which the customer purchases what appears to be a private network -- a network whose routers are owned by, or dedicated to the use of, the customer, and whose links connecting the routers are dedicated to that customer -- but in reality, the customer's traffic is actually routed across the Internet in common with all other users' traffic.

117. Virtual Private Network customers want to obtain service reliability, quality, and security attributes equivalent to what they could expect from a true private network that included transmission links devoted exclusively to their use. These attributes include, for instance, availability,[41] packet delays, throughput levels, security, and management visibility. They are embodied in a set of Service Level Agreements between the customers and the Virtual Private Network provider. The importance of such Service Level Agreements (SLAs) is captured in the following views of an industry observer:

> If [a] packet crosses the networks of multiple ISPs, these ISPs will have to define compatible SLAs and handle the packets in a comparable way for customers to receive the end-to-end service for which they've contracted. If two ISPs have incompatible SLAs, . . . the customer's end-to-end service will be "squishy."
>
> I don't know about you, but I don't think squishy [Class of Service ("CoS")] is going to cut it for voice. Or video. . . .
>
> There as general agreement that [a] forum is needed to clarify the business drivers behind [Quality of Service], bring the relevant technologies into focus and push

[41] The percentage of time a user on the network can exchange traffic with any other user.

> interoperability testing. Such a forum is needed if IP-based CoS is to become a reality on the Internet. If the industry must rely on bilateral SLAs to achieve end-to-end service, we'll never get out of the squishy phase.[42]

118. To meet its Service Level Agreements, the ISP providing a Virtual Private Network must typically invoke special measures, such as assigning high priority to the transmission of packets associated with the Virtual Private Network, extra care in administering routing software to ensure no packets are directed to the wrong destination, and so on. In turn, this requires close monitoring and management of the network resources that are used by the Virtual Private Network customer.

119. Both the access links and the backbone facilities of a Virtual Private Network are increasingly likely to be provided over a high-speed, SONET-based fiber optics transmission system. To the extent these facilities lie in BA-NY's territory, BA-NY has the ability to discriminate in favor of its ISP affiliate, in the fashion I described earlier when talking about the operations phase of the technology life cycle. There, I showed that the very sophistication of the systems introduced the potential for such discrimination.

120. This seeming contradiction occurs because when a system has the potential to achieve lower prices and better quality, plus offer better management capabilities, the uneven application of that technology will increase the differences between those that have the technology and those that do not. To the extent a BOC controls the SONET systems on the facilities used by the ISP for its access links and backbone, it is in a position to practice all of the following forms of discrimination as long as it retains the ability to exercise market power:

- Failure to deploy facilities, such as sufficiently-interconnected fiber rings, required to fully take advantage of the real-time failure recovery mechanism built into SONET;

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[42] Mary Petrosky, "Beware the Cult of IP," Network World, 12/21/98, p. 38.

- Selective use of the advanced provisioning and maintenance capabilities, which enable both faster and more accurate operations, on facilities used for Virtual Private Networks provided by its IXC affiliate, but not on facilities for Virtual Private Networks supplied by other IXCs;
- Slow(or no) response to alarms and trouble reports generated on links to the unaffiliated IXCs;
- Refusal to permit communications between its facilities and the facilities of other providers utilized by the non-affiliated IXCs, thereby reducing the ability of IXCs to perform end-to-end management of their Virtual Private Networks;
- Failure to carry out the operations activities that are not automated by SONET, such as facility construction, equipment maintenance, and the like, in a timely fashion;
- Collection and analysis of data that reveals competitively-sensitive information about the competitive IXCs, such as circuit counts, traffic volumes, and the like, that, if provided to its affiliated IXC, gives it the ability to compete more effectively; and
- Unwillingness to generate or receive particular message sets that IXCs' networks and customer management schemes may require.

121. This last form of potential discrimination is worth some discussion. The SONET standards provide for a great deal of overhead that can be used to carry operations information. In effect, SONET-based operations systems and network elements have available to them separate "virtual circuits" for carrying the management information they need to share. But most of the specific messages that might be carried over these circuits are not defined in the standards, and in fact, may vary between one vendor of equipment and another. An IXC might identify a particular management message – for instance, carrying a particular kind of data, alarm, etc. – that it would find useful to better manage its network or to provide valuable information to its

customers' operations systems. But the implementation of that message would require the cooperation of BA-NY to generate, receive, and/or act upon it. Were BA-NY to provide preferential treatment of its own IXC's requests to implement such new messages, it could provide a substantial advantage to that affiliate. Yet it would be very difficult to detect in any systematic fashion.

D. Discrimination Against the CLEC Operation of an Unaffiliated IXC

122. Customers access IXC services, including voice, broadband data, and ISP services, in one of three primary ways:

- The bulk of residential consumers establish a PSTN call to an IXC (or ISP affiliate), exchanging traffic with the IXC over the copper loop and switched local exchange connection;
- Small and large business customers have dedicated digital circuits to the IXC; and
- A few, but growing, number of residential and small business customers have xDSL, and access Internet and other broadband data services of the IXC over the "data" portion of the xDSL to the CO, from whence the bit streams from multiple customers are consolidated onto a high-speed digital transmission facility for transport to a central hub, where a fast packet device routes each customer's packets to the designated IXC or ISP.

123. The local connections may involve a BOC network alone, a CLEC network alone, or a serial connection through a BOC and CLEC network. If the IXC purchases access service from a CLEC, then a CLEC network is certainly involved in the connection. That being the case, if BA-NY is able to discriminate against the CLEC, it also discriminates against the IXC by impairing the ability of the CLEC to provide adequate access service to the IXC.

124. I will focus on discrimination in the case of the xDSL arrangement described above, and refer specifically to the case of using xDSL to access ISP services of the IXC. This is not to say that there is no risk of discrimination with dial-up or dedicated circuits being used today. Clearly there is, but dial-up and dedicated circuit services are technologically stable and somewhat transparent to the uses to which they are being put. Newer services, such as xDSL, that are targeted at Internet and other broadband data applications and are currently in the process of development and deployment, provide much greater opportunity for discrimination. Moreover, Internet and other broadband data traffic has been a small proportion of the total local traffic, but the incentive to engage in discrimination in the operation of services used to carry such traffic, and especially those like xDSL designed primarily to carry broadband data traffic, increases as the relative amount of such traffic grows.

125. In the case of xDSL, discrimination can arise in the following situations. First, the Commission's recent Section 319 Remand proceeding decision requires the BOCs to make DSL-capable lines available to CLECs on a non-discriminatory basis. In most cases, the CLECs must provide their own DSLAMs and packet switches. As a result, a CLEC seeking to provide DSL services must collocate in BOC central offices where they will need to locate the DSLAM and packet switching equipment to make use of the unbundled loops they purchase. But CLECs have had serious financial and practical problems obtaining reasonable collocation opportunities. In many end offices, ILECs claim that no collocation space is available; even it does exist, the price ILECs charge for the space are prohibitive, especially for new entrants with a handful of customers. Stringent measures are required to ensure the CLECs are not foreclosed from the collocation arrangements they require to take advantage of the Commission's decision on unbundled DSL-capable loops.

126. Second, as I discussed earlier, arguably only a limited number of loops in a given binder group can be provisioned with xDSL, due to problems with interference with the signals of other digital services. In addition, if a customer's loop is provisioned over a fiber DLC system, there are two issues. The first is who provides, installs, and manages the required DLC plug-in cards. The second is a capacity issue: the capacity of a DLC system can be quickly exhausted if xDSL achieves any significant penetration rate. Alternatively, the xDSL signals could be carried on separate fibers over the feeder portion of the outside plant, but this solution raises the additional issues of the availability to CLECs of "dark fiber" in the feeder cable.

127. Collectively, these issues provide abundant opportunities for BA-NY to discriminate against CLECs, and thus unaffiliated ISPs. They can hamper the provision of xDSL to the customers of ISPs by a) claiming sufficient wire pairs are unavailable in particular cables serving those customers, sufficient fiber capacity does not exist on DLC systems serving those customers, loops serving the customers are unable to support xDSL, and/or collocation space does not exist in an office where a CLEC wishes to collocate; and b) performing slow or inaccurate loop administration that is needed to assign loops to the CLECs. Even if CLECs ultimately are able to provide xDSL service, the delay may cause customers to sign up for BA-NY's ISP service, thereby disadvantaging unaffiliated IXCs.

128. Third, BA-NY may attempt to impose recurring and non-recurring charges for xDSL-capable loops that exceed their forward-looking economic costs. To the extent it is able to do so without being detected, or without the provisions of the Commission's local competition rules being effectively enforced, competition is diminished, and opportunities for anticompetitive price discrimination exist.

129. Finally, the present mode of offering xDSL is that it is a "one on one" arrangement between a customer and a single ISP. The ISP, or its CLEC local provider, is connected to the broadband access line and processes all the customer's traffic. Thus, there is in effect a single supplier of ISP applications and routing services. This leaves little room for CLECs to provide value-added services to their ISP customers -- they largely provide what is equivalent to a dedicated circuit between BA-NYs' COs and the ISPs.

130. While I have focused on the provision of broadband exchange access to the ISP operations of BA-NY and its competitors, all of the above description of discrimination opportunities can be equally well applied to the provision of broadband exchange access to other broadband data offerings that IXCs may offer. Through discrimination against CLECs who wish to provide competitive access to such IXC services, and thereby degrading the quality of such access, BA-NY can kill two birds with one stone: It can hamper its IXC competitors in utilizing alternative suppliers of exchange access, and it can hamper the ability of IXCs to compete in the local exchange marketplace through CLEC affiliates and partners, a marketplace that BA-NY itself has characterized as an increasingly "one-stop-shopping" marketplace.

131. This concludes my declaration.

I declare under penalty of perjury that the foregoing is true and correct. Executed on October 14, 1999.

Robert A. Mercer

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